1. **Test Dataset: 101AA00400008**

**S‐58 Recommended ENC Validation Checks covered in this section:**

|  |  |  |
| --- | --- | --- |
| **S‐58 Check** | **S‐158 Check** | **Description** |
| 80a | S100\_10a\_094 | For each interior boundary of a surface that is WITHIN the polygon defined by another interior boundary. |
| 80b | S100\_10a\_092 | For each interior boundary of a surface that is not WITHIN the polygon defined by the exterior boundary of the surface. |
| 80c | S100\_10a\_092 | For each interior boundary of a surface that is not WITHIN the polygon defined by the exterior boundary of the surface. |
| 505 | S-101\_A\_007 | If either Data Coverage, Navigational System of Marks, or Quality of Bathymetric Data meta features where dataset has maximum display scale 1:700000 and larger do not exist within the data set. |
| 566 | No S-101 check | For each NEWOBJ feature object with the attributes CLSDEF, CLSNAM and SYMINS not populated with exactly one of the following combinations. |
| 1006 | No S-101 check | If an update and its base cell do not have the same lexical level. |
| 1012 | No S-101 check | If a catalogue file does not exist. |

**Secondary Errors**

Critical – **S101\_A\_006** (*500*), **S101\_4\_003** (*519a*), (*548*)

Error – (11), **S100\_5\_007** (551a), **S101\_A\_054** (549),

Warnings – (90b), (562), S101\_A\_183 (571)

Nb:

**XXX**: S-100/S-101 associated to the S-158 check specified in the S-158 documentation

(*XXX*): No S-100/S-101 check found for the corresponding S-158 check in S-101\_Validation\_Checks or check not applicable for S-101

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Dataset Name** | | AA400008 | | | | | **S‐158 Check** | | | S100\_10a\_094 | | | | **Type** | C |
| **S-158 Description** | | For each feature object of geometric primitive area where an interior boundary is WITHIN an interior boundary. | | | | | | | | | | | | | |
| **Message** | | Interior boundary within an interior boundary. | | | | | | | | | | | | | |
| **Solution** | | Amend boundaries so that interior boundary is not within another interior boundary. | | | | | | | | **Conformity** | | | Topology | | |
| **Test Case No. 1** | | ACHBRT (A) feature created according to the error description. | | | | | | | | | | | | | |
| **Location** | | | **Feature** | **Attributes** | | | | **FRID** | | | | **FOID** | | | **VRID** |
| 32°27'49.08"S 61°03'58.00"E | | | ACHARE(A) | - | | | | FE-147 | | | | AA 1519796577 00001 | | | VE-69; VE-70 |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | S100\_10a\_094: An error “Interior boundary within an interior boundary” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| **Dataset Name** | | AA400008 | | | | | **S‐158 Check** | | | 80b | | | | **Type** | C |
| **S-158 Description** | | For each feature object of geometric primitive area where an interior boundary is not WITHIN an exterior boundary. | | | | | | | | | | | | | |
| **Message** | | Interior boundary outside of an exterior boundary. | | | | | | | | | | | | | |
| **Solution** | | Amend boundaries so that interior boundary is within exterior boundary. | | | | | | | | **Conformity** | | | Topology | | |
| **Test Case No. 1** | | ACHBRT (A) feature created with an interior boundary outside of an exterior boundary. | | | | | | | | | | | | | |
| **Location** | | | **Feature** | **Attributes** | | | | **FRID** | | **FOID** | | | | | **VRID** |
| 32°27'49.08"S 61°01'53.96"E | | | ACHBRT(A) | - | | | | FE-65 | | AA 0613244470 00065 | | | | | VE-62; VE-61 |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | 80b: An error “Interior boundary outside of an exterior boundary” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| **Dataset Name** | | AA400008 | | | | | **S‐158 Check** | | | 80c | | | | **Type** | C |
| **S-158 Description** | | For each feature object of geometric primitive area where an exterior boundary is WITHIN an interior boundary. | | | | | | | | | | | | | |
| **Message** | | Exterior boundary within an interior boundary. | | | | | | | | | | | | | |
| **Solution** | | Amend boundaries so that exterior boundary is not within the interior boundary. | | | | | | | | **Conformity** | | | Topology | | |
| **Test Case No. 1** | | RESARE (A) feature created with an exterior boundary within an interior boundary. | | | | | | | | | | | | | |
| **Location** | | | **Feature** | **Attributes** | | | | **FRID** | | **FOID** | | | | | **VRID** |
| 32°27'44.78"S 61°01'27.39"E | | | RESARE (A) | CATREA=9 | | | | FE-63 | | AA 2784931517 00063 | | | | | VE-58; VE-57 |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | 80c: An error “Exterior boundary within an interior boundary” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| **Dataset Name** | | AA400008 | | | | | **S‐158 Check** | | | 505 | | | | **Type** | C |
| **S-158 Description** | | If either M\_COVR, M\_NSYS or M\_QUAL meta objects do not exist within the data set. | | | | | | | | | | | | | |
| **Message** | | Mandatory feature objects are missing. | | | | | | | | | | | | | |
| **Solution** | | Include mandatory feature objects M\_COVR, M\_NSYS  and M\_QUAL. | | | | | | | | **Conformity** | | | 3.4 | | |
| **Test Case No. 1** | | Mandatory feature M\_COVR, M\_NSYS and M\_QUAL have been deleted. | | | | | | | | | | | | | |
| **Location** | | | **Feature** | **Attributes** | | | | **FRID** | | **FOID** | | | | | **VRID** |
| - | | | - | - | | | | - | | - | | | | | - |
| **Screen Capture** | | - | | | | | | | | | | | | | |
| **Expected Test Results** | | 505: An error “Mandatory feature objects are missing.” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | 500: additional errors ‘Objects fall outside coverage object’ must be triggered. | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| **Dataset Name** | | AA400008 | | | | | **S‐158 Check** | | | 566 | | | | **Type** | C |
| **S-158 Description** | | For each NEWOBJ feature object with the attributes CLSDEF, CLSNAM and SYMINS not populated with exactly one of the following combinations: | | | | | | | | | | | | | |
| **CLSDEF** | | | **CLSNAM** | | | | **SYMINS** | | | | | | |
| A Virtual object which indicates navigable water lies northwards | | | Virtual AtoN, North Cardinal | | | | SY(BRTHNO01);SY(BCNCAR01); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object which indicates navigable water lies eastwards | | | Virtual AtoN, East Cardinal | | | | SY(BRTHNO01);SY(BCNCAR02); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object which indicates navigable water lies southwards | | | Virtual AtoN, South Cardinal | | | | SY(BRTHNO01);SY(BCNCAR03); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object which indicates navigable water lies westwards | | | Virtual AtoN, West Cardinal | | | | SY(BRTHNO01);SY(BCNCAR04); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking the port side of a channel | | | Virtual AtoN, Port Lateral | | | | SY(BRTHNO01);SY(BOYLAT24);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking the starboard side of a channel | | | Virtual AtoN, Starboard Lateral | | | | SY(BRTHNO01);SY(BOYLAT13); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking the port side of a channel | | | Virtual AtoN, Port Lateral | | | | SY(BRTHNO01);SY(BOYLAT23); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking the starboard side of a channel | | | Virtual AtoN, Starboard Lateral | | | | SY(BRTHNO01);SY(BOYLAT14); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking an isolated danger | | | Virtual AtoN, Isolated Danger | | | | SY(BRTHNO01);SY(BCNISD21); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking safe water | | | Virtual AtoN, Safe Water | | | | SY(BRTHNO01);SY(BOYSAW12); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object used to mark an area or feature referred to in nautical documents | | | Virtual AtoN, Special Purpose | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| A Virtual object marking a wreck | | | Virtual AtoN, Wreck Marking | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | | | |
| **Message** | | Invalid use of NEWOBJ. | | | | | | | | | | | | | |
| **Solution** | | Amend to reflect encoding guidance. | | | | | | | | **Conformity** | | | Appendix B1,  Annex A  (12.14.1.1) | | |
| **Test Case No. 1** | | New object features created with incorrect CLSDEF. | | | | | | | | | | | | | |
| **FOID** | **FRID** | | **Attributes** | | | | | | | | | | | | |
| **CLSDEF** | | | **CLSNAM** | | | | | **SYMINS** | | | | |
| AA 1519786291 00001 | FE-123 | | A Virtual object marking a wreck | | | Virtual AtoN, North Cardinal | | | | | SY(BRTHNO01);SY(BCNCAR01); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786295 00001 | FE-124 | | A Virtual object used to mark an area or feature referred to in nautical documents | | | Virtual AtoN, East Cardinal | | | | | SY(BRTHNO01);SY(BCNCAR02); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786297 00001 | FE-125 | | A Virtual object marking safe water | | | Virtual AtoN, South Cardinal | | | | | SY(BRTHNO01);SY(BCNCAR03); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786297 00002 | FE-126 | | A Virtual object marking an isolated danger | | | Virtual AtoN, West Cardinal | | | | | SY(BRTHNO01);SY(BCNCAR04); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786299 00001 | FE-127 | | A Virtual object marking the starboard side of a channel | | | Virtual AtoN, Port Lateral | | | | | SY(BRTHNO01);SY(BOYLAT24);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786299 00002 | FE-128 | | A Virtual object marking the port side of a channel | | | Virtual AtoN, Starboard Lateral | | | | | SY(BRTHNO01);SY(BOYLAT13); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786300 00001 | FE-129 | | A Virtual object marking the starboard side of a channel | | | Virtual AtoN, Port Lateral | | | | | SY(BRTHNO01);SY(BOYLAT23); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786302 00001 | FE-130 | | A Virtual object marking the port side of a channel | | | Virtual AtoN, Starboard Lateral | | | | | SY(BRTHNO01);SY(BOYLAT14); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786303 00001 | FE-131 | | A Virtual object which indicates navigable water lies westwards | | | Virtual AtoN, Isolated Danger | | | | | SY(BRTHNO01);SY(BCNISD21); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786304 00001 | FE-132 | | A Virtual object which indicates navigable water lies southwards | | | Virtual AtoN, Safe Water | | | | | SY(BRTHNO01);SY(BOYSAW12); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786305 00001 | FE-133 | | A Virtual object which indicates navigable water lies eastwards | | | Virtual AtoN, Special Purpose | | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519786306 00001 | FE-134 | | A Virtual object which indicates navigable water lies northwards | | | Virtual AtoN, Wreck Marking | | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | 566: 12 errors “Invalid use of NEWOBJ” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
| **Test Case No. 2** | | New object features created with incorrect CLSNAM. | | | | | | | | | | | | | |
| **FOID** | **FRID** | | **Attributes** | | | | | | | | | | | | |
| **CLSDEF** | | | | **CLSNAM** | | | | **SYMINS** | | | | |
| AA 1519791744 00001 | FE-135 | | A Virtual object which indicates navigable water lies northwards | | | | Virtual AtoN, Special Purpose | | | | SY(BRTHNO01);SY(BCNCAR01); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791745 00001 | FE-136 | | A Virtual object which indicates navigable water lies eastwards | | | | Virtual AtoN, Wreck Marking | | | | SY(BRTHNO01);SY(BCNCAR02); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791746 00001 | FE-137 | | A Virtual object which indicates navigable water lies southwards | | | | Virtual AtoN, Isolated Danger | | | | SY(BRTHNO01);SY(BCNCAR03); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791747 00001 | FE-138 | | A Virtual object which indicates navigable water lies westwards | | | | Virtual AtoN, Port Lateral | | | | SY(BRTHNO01);SY(BCNCAR04); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791749 00001 | FE-139 | | A Virtual object marking the port side of a channel | | | | Virtual AtoN, West Cardinal | | | | SY(BRTHNO01);SY(BOYLAT24);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791749 00002 | FE-140 | | A Virtual object marking the starboard side of a channel | | | | Virtual AtoN, Safe Water | | | | SY(BRTHNO01);SY(BOYLAT13); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791750 00001 | FE-141 | | A Virtual object marking the port side of a channel | | | | Virtual AtoN, Starboard Lateral | | | | SY(BRTHNO01);SY(BOYLAT23); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791751 00001 | FE-142 | | A Virtual object marking the starboard side of a channel | | | | Virtual AtoN, Port Lateral | | | | SY(BRTHNO01);SY(BOYLAT14); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791752 00001 | FE-146 | | A Virtual object marking an isolated danger | | | | Virtual AtoN, Starboard Lateral | | | | SY(BRTHNO01);SY(BCNISD21); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791754 00001 | FE-145 | | A Virtual object marking safe water | | | | Virtual AtoN, East Cardinal | | | | SY(BRTHNO01);SY(BOYSAW12); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791774 00001 | FE-144 | | A Virtual object used to mark an area or feature referred to in nautical documents | | | | Virtual AtoN, South Cardinal | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519791776 00001 | FE-143 | | A Virtual object marking a wreck | | | | Virtual AtoN, North Cardinal | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | 566: 12 errors “Invalid use of NEWOBJ” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
| **Test Case No. 3** | | New object features created with incorrect SYMINS. | | | | | | | | | | | | | |
| **FOID** | **FRID** | | **Attributes** | | | | | | | | | | | | |
| **CLSDEF** | | | | **CLSNAM** | | | | **SYMINS** | | | | |
| AA 1519717053 00001 | FE-99 | | A Virtual object which indicates navigable water lies northwards | | | | Virtual AtoN, North Cardinal | | | | SY(BRTHNO01);SY(BCNCAR02); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717055 00001 | FE-100 | | A Virtual object which indicates navigable water lies eastwards | | | | Virtual AtoN, East Cardinal | | | | SY(BRTHNO01);SY(BCNCAR01); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717056 00001 | FE-101 | | A Virtual object which indicates navigable water lies southwards | | | | Virtual AtoN, South Cardinal | | | | SY(BRTHNO01);SY(BCNCAR04); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717057 00001 | FE-102 | | A Virtual object which indicates navigable water lies westwards | | | | Virtual AtoN, West Cardinal | | | | SY(BRTHNO01);SY(BCNCAR03); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717062 00001 | FE-103 | | A Virtual object marking the port side of a channel | | | | Virtual AtoN, Port Lateral | | | | SY(BRTHNO01);SY(BOYLAT13); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717063 00001 | FE-104 | | A Virtual object marking the starboard side of a channel | | | | Virtual AtoN, Starboard Lateral | | | | SY(BRTHNO01);SY(BOYLAT24);TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717064 00001 | FE-105 | | A Virtual object marking the port side of a channel | | | | Virtual AtoN, Port Lateral | | | | SY(BRTHNO01);SY(BOYLAT14); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717065 00001 | FE-106 | | A Virtual object marking the starboard side of a channel | | | | Virtual AtoN, Starboard Lateral | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717067 00001 | FE-107 | | A Virtual object marking an isolated danger | | | | Virtual AtoN, Isolated Danger | | | | SY(BRTHNO01);SY(BOYSPP11); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717068 00001 | FE-108 | | A Virtual object marking safe water | | | | Virtual AtoN, Safe Water | | | | SY(BRTHNO01);SY(BCNISD21); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717069 00001 | FE-109 | | A Virtual object used to mark an area or feature referred to in nautical documents | | | | Virtual AtoN, Special Purpose | | | | SY(BRTHNO01);SY(BOYSAW12); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| AA 1519717070 00001 | FE-110 | | A Virtual object marking a wreck | | | | Virtual AtoN, Wreck Marking | | | | SY(BRTHNO01);SY(BOYLAT23); TX('V-AIS',3,2,2,'15110',2,0,CHMGD,11) | | | | |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | 566: 12 errors “Invalid use of NEWOBJ” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| **Dataset Name** | | AA400008 | | | | | **S‐58 Check** | | | 1006 | | | | **Type** | C |
| **S-158 Description** | | If an update and its base cell do not have the same lexical level. | | | | | | | | | | | | | |
| **Message** | | Update and base cell do not have the same lexical level. | | | | | | | | | | | | | |
| **Solution** | | Amend the lexical level of the update. | | | | | | | | **Conformity** | | | Part 3 (8.4.2.2a) | | |
| **Test Case No. 1** | | Lexical level value has been changed for update file. | | | | | | | | | | | | | |
| **Location** | | | **Feature** | **Attributes** | | | | **FRID** | | | | **FOID** | | | **VRID** |
| **-** | | | **-** | **-** | | | | **-** | | | | **-** | | | **-** |
| **Screen Capture** | |  | | | | | | | | | | | | | |
| **Expected Test Results** | | 1006: An error “Lexical Level in update differs from that in the cell” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | |
| **Dataset Name** | | AA400008 | | | | | **S‐58 Check** | | | 1012 | | | | **Type** | C |
| **S-158 Description** | | If a catalogue file does not exist. | | | | | | | | | | | | | |
| **Message** | | No catalogue file exists. | | | | | | | | | | | | | |
| **Solution** | | Create a catalogue file. | | | | | | | | **Conformity** | | | Appendix B.1 (5.4.1) | | |
| **Test Case No. 1** | | Catalogue file is missing from folder. | | | | | | | | | | | | | |
| **Expected Test Results** | | 1012: An error “No catalogue file detected, cannot check CRC” must be triggered. | | | | | | | | | | | | | |
| **Secondary Critical Errors** | | None | | | | | | | | | | | | | |